

NEW SPECIES OF *CLITORIA* SUBGENUS
BRACTEARIA SECTION *CAULIFLORAE*
(LEGUMINOSAE) FROM COLOMBIA
AND BRAZIL¹

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Members of *Clitoria* L. subgenus *Bractearia* (Mart. ex Benth.) Fantz section *Cauliflorae* Fantz are typically lianas that bear both cauliflorous inflorescences below the leaves and often axillary inflorescences in the upper leafy portions of the plant. Within the genus *Clitoria* cauliflory is unique to section *Cauliflorae*. Flowers with narrow bracteoles and conspicuous calyx lobes distinguish members of section *Cauliflorae* from lianas belonging to other sections of subgenus *Bractearia*, particularly when a specimen might not exhibit cauliflory. Section *Cauliflorae* comprises the following species (Fantz, 1979): *C. arborescens* R. Brown in Ait., *C. coriacea* Schery, *C. javitensis* (H.B.K.) Benth., *C. leptostachya* Benth., *C. obidensis* Huber, *C. sagotii* Fantz, *C. selloi* Benth., and the three species described below.

1. *CLITORIA cavalcantei* Fantz, sp. nov.

Frutex parvus, caulibus lignosis altis volubilius. Folia trifoliata, glabrescentes; foliolis ellipticis ad elliptico-oblongis, longiacuminatis. Inflorescentiae brevissimae, 0.5–1.5 cm longae, axillares et cauliflorae, racemoso-nodosae, pauciflorae. Flores magni, 6–7 cm, roseopurpureo. Calyces trichomatibus dispersis appressis, tubo 16–20 mm, lobis 5–7 mm. Stylus elongatus, 24–32 mm, longitudine ovarium magnopero superantes. Legumen (in statu juvenili) stipitatum, planum, trichomatibus microuncinatis confertis.

Small shrub with stems tall climbing (=liana). Branches 2–4 mm diam. *Leaves* 3-foliolate, coriaceous, nearly glabrous or rarely with a few appressed trichomes along the veins on the lower surface; leaflets elliptic to elliptic-oblong, rarely obovate, apex acuminate, acumen 1–2.5 cm long, base broadly cuneate, midrib subimpressed above, primary veins of 7–9 pairs, lamina 10–17 cm long, 5–9 cm wide. Petiole subterete, 3–6 cm long, pubescence microuncinate; rachis 2–2.5 cm; petiolules rugose, glabrate, 5–6 mm. Stipules deciduous, lanceolate-ovate, acute, sparsely pubescent, 5–6 mm long, 2 mm wide; stipels more or less persistent, linear, acute, glabrate, 3–6 mm long,

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1 mm wide. *Inflorescence* axillary and cauliflorous, few-flowered (4–8 flowers), racemose, more or less nodose, solitary or paired, 0.5–1.5 cm long; axis pubescence microuncinate with falcate-spreading macrotrichomes. Pedicels 5–8 mm, pilose. Bracts ovate, acute, strigose, more or less ciliolate, 3–5 mm long, 1–1.5 mm wide. Bracteoles lanceolate-ovate, acute, 5–7 mm long, 1–2 mm wide, pubescence moderately dense, appressed. *Flowers* large, (5.5) 6–7 cm, corolla rose-colored becoming purplish. Calyx pubescence appressed, thinned, microuncinate trichomes not observed (typically found in closely related species), tube 16–20 mm long, 5–9 mm wide at the base expanding to 8–11 mm wide at the throat, lobes deltoid-ovate, acuminate, usually with a broad-angled sinus (nearly 90°) between the lateral and dorsal teeth, 5–8 mm long, 3.5–5 mm wide, ventral lobe 7–10 mm. Vexillum pubescence conspicuously microuncinate toward apex and margins, appressed macrotrichomes moderate, more or less confined along the veins; blade 3.5–4 cm wide, claw 14–18 mm. Alae extended beyond the carina by 6–11 mm, blade 22–27 mm long, 4–7 mm wide, claw 17–22 mm. Carina falcate, 11–13 mm long, 4–5 mm wide, claw 27–29 mm. Staminal tube nearly straight, 39–46 cm long, free filaments 2–5 mm; anthers lanceolate, 1.6–2.4 mm. Gynophore black, 3–6 mm, pubescence of microuncinate with scattered macrotrichomes; ovary 12–16 mm long, 1 mm wide, pubescence white, sericeous, macrotrichomes dense masking uncinatae microtrichomes beneath; style dark-colored, greatly exceeding the ovary length, 24–32 mm long, bearded, geniculate 7–10 mm from the distal end. Legume unknown except in the juvenile state (ca 9.5 x 0.6–0.7 cm), stipitate, flat, swollen around the seeds, densely pubescent with uncinatae microtrichomes and scattered, suberect macrotrichomes; stipe 19 mm. Seeds unknown, ca 9 per pod, Figure 1.

TYPE COLLECTIONS: BRAZIL. PARÁ: Cipó lenhoso, flor na antea, rósea de posis roxo, mata devastada, comum, Parque Ingigena do Tumucumaque, Rio Parú de Oeste, Missão Tiriyo, arredores da Missão, $2^\circ 20'N-55^\circ 45'W$, 1 Mar 1970, *Cavalcante 2570* (HOLOTYPE: NY; ISOTYPES: F 1717517, S, U 256619B). BRAZIL. AMAZONAS: Río Negro, Sapó, Oct 1851, *Spruce 1877* (PARATYPE: K—HO 847/407, hb. Bentham).

The specimen selected as the holotype is the only one examined that bears any fruits. It also contains parts of at least two dissected flowers placed in the packet mounted on the sheet. Specimens from the Royal Botanic Gardens, Kew, did not have an accession number assigned to them. The number cited to identify the type specimen more accurately was the loan and accession number placed on the herbarium sheet when the loan was prepared at Kew.

Specimens of *C. cavalcantei* are usually misidentified as *C. javitensis*, a species which they superficially resemble. When Bentham (1858) revised the genus, *Spruce 1877* was cited as typical of *C. javitensis*, an interpretation confirmed by Sandwith (1931), but rejected by Fantz (1981) who excluded the specimen from the concept of *C. javitensis*.



Figure 1. Holotype of *Clitoria cavalcantei* (Cavalcante 2570, NY).

Clitoria javitensis can be distinguished from this new species by a shorter style (17–25 mm) which is subequal to the ovary, the larger fruits bearing conspicuous reddish-brown macrotrichomes and lacking the uncinat microtrichomes, longer inflorescences, and leaflets with 9–15 pairs of primary veins and often some appressed trichomes on the lower surface. The fruits of *Clitoria javitensis* are typically 18–24 cm long and 2–2.5 cm wide. Even though the fruits of *Clitoria cavalcantei* are not fully mature, a comparison to more closely related species such as *C. sagotii* indicate that the fruits of *C. cavalcantei* will probably be near 15 cm long and 1–1.5 cm wide.

Clitoria cavalcantei appears to be closely related to a group of species that includes *C. sagotii*, *C. coriacea*, and *C. tunuhiensis*. *Clitoria cavalcantei* is distinguished from these species both by the presence of a calyx with appressed trichomes and the absence of the uncinat microtrichomes of the other three species. Furthermore, it has a longer style, a longer inflorescence, and a larger calyx. The other three species have sessile inflorescences with a calyx tube of 11–17 mm that is conspicuously uncinat-pubescent, and a style of 21–27 mm.

All known collections of *C. cavalcantei* are from forests of the Amazon Basin in the western Brazilian states of Amazonas and Pará. Flowers have been collected from mid-July to early March, with immature fruits collected in early March.

2. CLITORIA tunuhiensis Fantz, sp. nov.

Vites lignosi. Folia trifoliata, subter rufotomentosi, foliolis ovatis ad ovato-ellipticis, breviacuminatis, revolutis leviter, non-ceriferentibus, et costa prominulis super pagino adaxiali. Inflorescentiae sessiles, ad 0.8 cm longis, axillares, pauciflorae. Bracteolae lanceolatae, 13–14 mm longae, insertae 2–3 mm subter base calyce. Flores 4.5–5 cm. Calyx pilosis et uncinatis conspicuus, tubo 15–17 mm, lobis 9–11 mm. Unguis vexilli elongatus. Stylus elongatus, longitudine ovarium magnopero superantes. Legumen ignotum.

Liana. Branches 2–3 mm diam., puberulent, rufus becoming whitened with age. Leaves 3-foliolate, thick membranous, leaflets ovate to ovate-elliptic, apex short-acuminate, margins revolute, base rotund, midrib slightly raised on the upper surface, pilose, primary veins of 7–9 pairs, upper surface glabrous, lower surface rufus-tomentose, lamina 6.5–9.5 cm long, 4–5.5 cm wide. Petioles subterete, 2–3 cm, rufus-puberulent; rachis 1.5–2.5 cm; petiolules subquadrangular, rufus-puberulent, 4–5 mm. Stipules lanceolate, acute, 4–5 mm long, 2 mm wide, ciliate and strigose, densest toward apex; stipels linear, acute, 3–4 mm long, 0.5–1 mm wide, uncinat pubescent. Inflorescence axillary, solitary, racemose, few-flowered (2–4 flowered), sessile to 0.8 cm long; axis densely rufo-puberulent. Pedicels 5–7 mm. Bracts lanceolate, acute, 5–7 mm long, 1.5–2 mm wide, pubescence uncinat, pilose, and more or less ciliate. Bracteoles lanceolate, acuminate, 13–14 mm long, 2.5–3 mm wide, inserted 2–3 mm below the calyx base, ciliate, densely

uncinate, and scattered pilose. *Flowers* medium-sized, ca 4.5 cm (slightly immature, probably becoming 5–6 cm). Calyx pubescence moderately dense, microtrichomes uncinata, macrotrichomes pilose, tube 15–17 mm long, 4–5 mm wide at the base to 7–9 mm wide at the throat, lobes lanceolate, acuminate, 9–11 mm long, 3–4 mm wide, ventral lobe linear, arcuate towards apex, 10–12 mm long. Vexillum pubescence appressed, tawny, blade 2.5 cm wide, claw 6 mm. Alae extended beyond the carina by 4 mm, blade spatulate, 20 mm long, 4–6 mm wide, claw 13 mm. Carina falcate, 12 mm long, 4 mm wide, claw 21 mm. Staminal tube 28 mm, incurved abruptly near apex, free filaments 2–4 mm; anthers lanceolate, 2 mm long, 0.7–0.8 mm wide, connective acute. Gynophore 4–5 mm, pubescent near apex yellowish-white; ovary 10 mm long, 1.2 mm wide, sericeous, white tinged yellowish; style greatly exceeding ovary length, 21 mm long, bearded, geniculate 5–6 mm from the distal end; stigma flattened, subcapitate, ca 0.7 mm diam. *Legume* unknown. Figure 2.

TYPE COLLECTION: BRAZIL. AMAZONAS: Vine, Río Negro, Içana, Serra de Tunuhy, 5 May 1947, *Fróes* 22274 (HOLOTYPE: U 95456A).

Only two species in subgenus *Bractearia* have revolute leaf margins, *C. tunubiensis* and its close relative *C. coriacea* (syn. *C. cerifera* Cowan). Both have similar appearances to the flowers, inflorescences, and leaves. *Clitoria coriacea* is distinguished easily by the shrubby habit, leaves with appressed trichomes and ceriferous on the lower surface, an impressed midrib on the upper leaf surface, and shorter bracteoles (5–11 mm). The margin of *C. coriacea* is strongly revolute, whereas the margin of *C. tunubiensis* is weakly revolute. This new species is known only from the type locality.

3. CLITORIA plumosa Fantz, sp. nov.

Caules lignosi alti volubili, conspicuo rufotrichomatibus conferto. Folia trifoliata, untrinque rufopubescentiae, foliolis oblongis ad elliptico-oblongis, acuminatis. Stipulae magnopere elongati, 2–3 cm. Inflorescentiae prolatae, 10–15 cm, multiflorae congestis inter conspicuos bracteos. Bracteae stipuloides, 13–16 mm. Bracteolae magnopere elongati, 22–25 mm longi. Florae grandes maxime 7.5–9 cm. Calyx tubo 27–30 mm cum lobo ventrali plumosi, subulati, 23–28 mm, circa bis longitudine ceterosum. Unguis petalorum prolatae. Stylus elongatus, longitudine ovarium magnopere superantes. Legumen ignotum.

Liana, high growing into forest crown (teste *Haught 2075*), conspicuously and densely rufo-pubescent, trichomes spreading to erect, more or less stiff, 1.5–3 mm long. Branches 5–8 mm diam., hollow. *Leaves* 3-foliolate, conspicuously rufo-pubescent on both surfaces, thick membranous, leaflets oblong to elliptic-oblong, apex obtuse, abruptly acuminate, acumen 0.5–1 cm long, to 4 mm wide, mucronate or with bristle tip of 3–6 mm, base broadly cuneate, midrib weakly raised on upper surface, primary veins of 10–12 pairs, lamina 9.5–16 cm long, 4–6 cm wide. Petioles angular-terete, 11–14 cm, conspicuously pubescent with spreading tawny-rufus trichomes; rachis

4–5 cm; petiolules quadrangular, 4–5 mm, pubescence of uncinatae microtrichomes masked by the long, dense, macrotrichomes. Stipules highly elongated, conspicuous, persistent, narrowly oblong-lanceolate, narrowing into a long acumen, 19–29 mm long, 2–4 mm wide, ciliate with outer surface glabrate; stipels similar, terminal ones 8–15 mm long, 0.3–1 mm wide, lateral ones 12–20 mm long, 1–1.5 mm wide. *Inflorescence* cauliflorous, multiflowered, crowded; axis 10–15 cm long, conspicuously bracteate, pubescence of uncinatae trichomes masked by the dense, rufus macrotrichomes. Pedicels 5–8 mm. Bracts stipule-like, 13–16 mm long, 2–4 mm wide, pubescence of uncinatae microtrichomes with a few scattered macrotrichomes.



Figure 2. Holotype of *Clitoria tunubiensis* (Fróes 22274, U).

Bracteoles highly elongated, stipule-like, long acuminate, base more or less attenuate, 22–25 mm long, 3–4 mm wide, pubescence ciliate with uncinata microtrichomes and scattered macrotrichomes. *Flowers* gigantic, 7.5–9 cm, corolla white (?—see discussion below) fading to yellow. Calyx pubescence dense, tawny-rufus, spreading, tube 27–30 mm long, 8–10 mm wide at the base expanding to 10–14 mm wide at the throat, lobes deltoid-lanceolate, rapidly narrowing to a long-acuminate apex, dorsal lobes 15–18 mm, lateral lobes 13–16 mm, ventral lobe highly elongated with a linear base and subulate apex, plumose, 23–28 mm long, 0.3–1 mm wide. Vexillum pubescence glabrate to scattered uncinata, densest toward margins and base, blade 4.5–5 cm wide, claw 9–11. Alae extended beyond the carina by 6–8 mm, blade falcate-spatulate, 30–35 mm long, 5–10 mm wide, claw 23–26 mm. Carina falcate, blade 13–17 mm long, 6–8 mm wide, claw 34–38 mm. Staminal tube nearly straight, 49–53 mm long, free filaments 3–6 mm; anthers lanceolate, 2.7–3 mm long, 1 mm wide, connective apiculate. Gynophore sessile; ovary 21–22 mm long, 1 mm wide, pubescence sericeous, white, spreading-ascending; style 31–33 mm long, bearded, geniculate 13–14 mm from the distal end; stigma capitate, flattened, 1 mm diam. *Legume* unknown. Figure 3.

TYPE COLLECTION: *COLOMBIA*. SANTANDER: Viscaina Creek, 32 km S of El Centro, vicinity of Barranca Bermeja, Magdalena Valley, between Sogamoso and Carare River, ca 100 m, 15 Nov 1936, *Haught* 2075 (HOLOTYPE: UC \bar{M} 049493; ISOTYPES: F 1450138, GH, NY).

This species is the only one in the genus which bears a highly elongated, plumose, ventral calyx lobe. Furthermore, the large, conspicuous stipules, bracts, bracteoles, and dense reddish-pubescent stems and leaves aid as a quick identification of this species. *Clitoria obidensis* is a closely related species distinguished by shorter stipules (6–11 mm), shorter inflorescence (to 1 cm), shorter bracts (6–11 mm), longer calyx lobes (20–27 mm), and shorter ovary (13–17 mm).

Haught described the flowers as light yellow flushed red. No other species of *Clitoria* is reported to have yellowed flowers. However, specimens of several other species have been collected that exhibit yellow flowers in the dried state. Some collectors have noted that these flowers were white fading to yellow. I suspect that the flowers of *C. plumosa* fit the same pattern, that they are white becoming yellowish with age.

Haught reported that he has seen the fallen flowers several times before, so the plant is not uncommon. Yet, as represented in herbarium collections, it is presently known only from the type locality.

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Figure 3. Holotype of *Clitoria plumosa* (Holotype: Haught 2075, UC).

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